

Impact of a Comprehensive Physiotherapy on a Complex Case of Locked Facet Joint: A Case Report

Indrani Gurjalwar¹, Gouri Kalaskar¹, Mitushi Deshmukh², Pratik Phansopkar²

¹Resident, ²Assistant Professor, Musculoskeletal Physiotherapy Department, Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India

Abstract

Introduction -Locked facet joint is a type of facet joint dislocation which occurs due to jumping of the inferior articular process over the superior articular process of the vertebra below and causes locking in that position. It can be unilateral or bilateral. In case of unilateral facet joint locking mechanism is flexion/distractio and rotation. Only 30% of cases associated with neurologic defect. Most often it occurs at C4-5 and C5-6 level. Inferior articular facet of superior vertebral body is locked in front of the superior facet of the more inferior vertebral body but only on one side. X-ray Image Findings in such cases are - subtle, slight anterior subluxation of one vertebral body on the one below usually less than 25% of the width. On lateral view of cervical spine, some bodies appear true lateral below level of injury and oblique above level of injury that is the "Bow-tie sign". Spinous processes do not align on frontal film. Spinous processes of inferior vertebrae displace toward the locked side. In case of bilateral facet joint locking there is always a history of severe flexion injury. Both anterior and posterior ligamentous structures are disrupted at site of injury. More superior vertebra subluxes forward by 50% or more of the body below. Usually occurs in lower cervical spine. Generally, facet locking is a rare occurrence. **Case Description** – a case of 43 years old female is presented in the report who presented with pain and stiffness in neck which was sudden in onset was present since last two days. Assessment, patient's history and treatment have been discussed in the case study. **Conclusion** – This case study concluded that there is a significant effect of the given therapeutic intervention on pain, range of motion and activities of daily living (ADL) of the patient.

Keywords: Facet Joint Lock, Pain, Stiffness and Manual Manipulations.

Introduction

Locked facet joint is a form of facet joint dislocation which occurs due to the jumping of the lower articular process over the lower vertebra upper articular process and becomes locked in the place. It Can be mutual or unilateral. ¹ If there is muscle weakness in the surrounding area, or previous injury/locking, it may not take much force to cause it. The simple act of bending

or twisting, even a little bit, can create dislocation. Even if the back muscles are strong, exerting more motion or force than the muscles have strength for will push the joint out of place. Facet joint pain can occur secondary to a traumatic event, but more commonly, it is the result of repetitive stress and/or cumulative low-level trauma. Data from cadaveric studies have shown that anatomical changes occur more rapidly during sustained flexion than with repetitive movements.² Unilateral facet dislocation without fracture can also be created with moderate loads when axial torque is applied while the facet is distracted.³ : During bilateral facet dislocation, the main loads included flexion moment and forces of axial compression and anterior shear. These loads caused flexion rotation, facet separation, and anterior translation of the upper facet relative to the lower.⁴ Inflammation and degenerative changes to

Corresponding Author:

Mitushi Deshmukh,

Assistant Professor, Musculoskeletal Physiotherapy Department, Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India.

Email – mitushideshmukh11@gmail.com

the facet joints may result in pain, loss of motion, and severe encroachment or pinching of the nerve exiting the spinal column. Common causes of facet joint irritation include: Degeneration, arthritic changes or general wear-and-tear of the joint over time.⁵ Symptoms of a locked facet joint can include Pain, inability to move back to your starting position, referred or radiant pain away from the joint, muscle spasms on the same or opposite side, difficulty stretching, difficulty moving in any direction. Treatment consists of a simple, usually painless manipulation to unlock the joint. However, exercises are prescribed to restore range of motion, and to build muscle strength in that area.⁶ In this case patient had weakness of cervical muscles due to posture she assumed for a long time due to her profession. This weakness of cervical muscles and some trauma which may have occurred unknowingly during any day to day activity may have resulted in locking of the facet joint in this case.

Patient Information:

A 43 years old female patient, nurse by occupation, with right-handed dominance was referred into physiotherapy department. As per the information given by the patient, she started experiencing pain and

stiffness in neck since morning of 1st of August. Patient tried some of the home remedies like she applied some pain-relieving gels and took hot fomentation but had no relief. Hence after two days that is on 4th of August patient came to Acharya Vinoba Bhave Hospital and consulted in orthopedic department. Here in orthopedic department detail evaluation and x-ray investigations were done. In x-ray the tip of the inferior articular process of C₄ vertebra was seen anterior to the superior articular process of the C₅ vertebra and hence patient was diagnosed as a case of cervical locked facet joint (C₄ – C₅) (Image 1). Patient was prescribed with analgesic medicine and was advised physiotherapy. Since then patient is undergoing physiotherapy treatment.

On examination, swelling was seen on the neck (posterior aspect) and upper back region. Patient had unbearable pain and rated it 9 on visual analogue scale. On palpation grade 3 tenderness was noted in the posterior region of the neck. Ranges and muscle strength of the cervical joint were found to be reduced (Image 2). Right side trapezius was slightly tighter than the left side. Neck disability index was recorded for the patient and 70% disability was noted. Ranges and MMT before starting the treatment are given in the below tables.

EVENTS	DATE
Symptoms arousal	1 August 2020
Evaluation and Investigation	4 August 2020
Beginning of Physiotherapy treatment	5 August 2020
Revaluation to check improvement in patients’ symptoms (improvement was seen in outcome measures)	12 August 2020
Revaluation to check improvement in patients’ symptoms (significant improvement was seen in outcome measures)	20 August 2020

Timeline:

Table 1. – Showing Ranges Of Cervical Joint Before And After Treatment				
Cervical Range of Motion	Pre-Treatment		Post Treatment	
Flexion	30		75	
Extension	20		65	
	Right	Left	Right	Left
Lateral Rotation	15	12	35	30
Side Flexion	30	20	80	75

Table 2: Muscle Strength Before and after Treatment						
Cervical Muscles	Pre-Treatment MMT		Resistive Isometric Grading	Post Treatment MMT		Resistive Isometric Grading
Flexors	3-		Painful and Weak	4		Painless and Strong
Extensors	3-		Painful and Weak	4		Painless and Strong
	Right	Left		Right	Left	
Lateral Rotators	3-	3-	Painful and Weak	4	4	Painless and Strong
Side Flexors	3-	3+	Painful and Weak	4	4	Painless and Strong

TABLE 3 – VAS AND NDI SCORE PRE AND POST TREATMENT		
	PRE- TREATMENT	POST TREATMENT
VAS SCORE	9	3
NDI	70%	30%

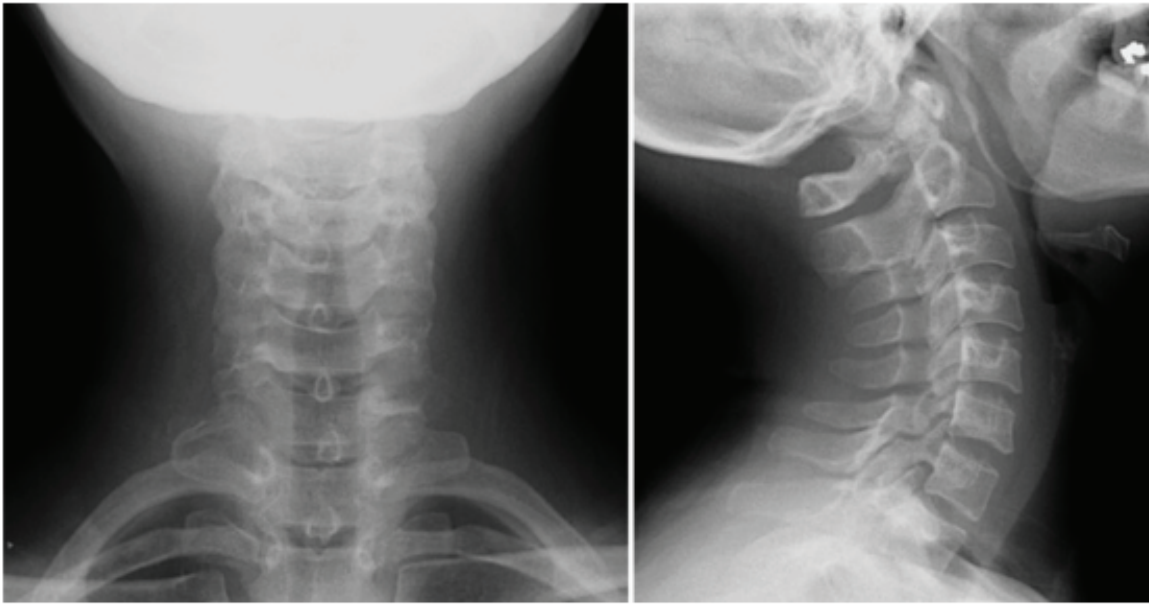


IMAGE 1 – AP and Lateral View Cervical X-ray



IMAGE 2 – Cervical Ranges before Treatment

There was no evidence of any neurological involvement. The therapeutic interventions were started from first day after taking written consent from the patient.

In 1st week - Mulligan mobilization was used to mobilize the stiff cervical joint (Image 3). SNAGS was applied in sitting position and 7 repetitions were given in each sitting. MET was also given as per the dosage of 5 repetition per sitting to mobilize the joint and reduce stiffness. Passive stretching of trapezius muscle was given. Mobilization session was followed by active exercises of neck like active neck movement. Post

treatment icing was given for 10 mins.

In 2nd week – same protocol as first week was given with few new active exercises like active neck movements, chin tucks, static neck, isometric neck and active trapezius stretching which were added. Patient was advised to practice all the active exercises twice at home.

After 2 weeks of regular treatment patient had relief in the symptoms that is there was considerable decrease in pain and stiffness. Significant improvement was seen visual analogue scale rating which reduced to 3

after 2 weeks of treatment. Ranges of cervical joint had improved significantly. Improvement in muscle strength was also seen. As symptoms were relieved improvement

was also seen in neck disability index and the disability was reduced to 30%. Post treatment ranges and MMT is given in the tables below.



IMAGE 3 – Manual Manipulations given by the Therapist

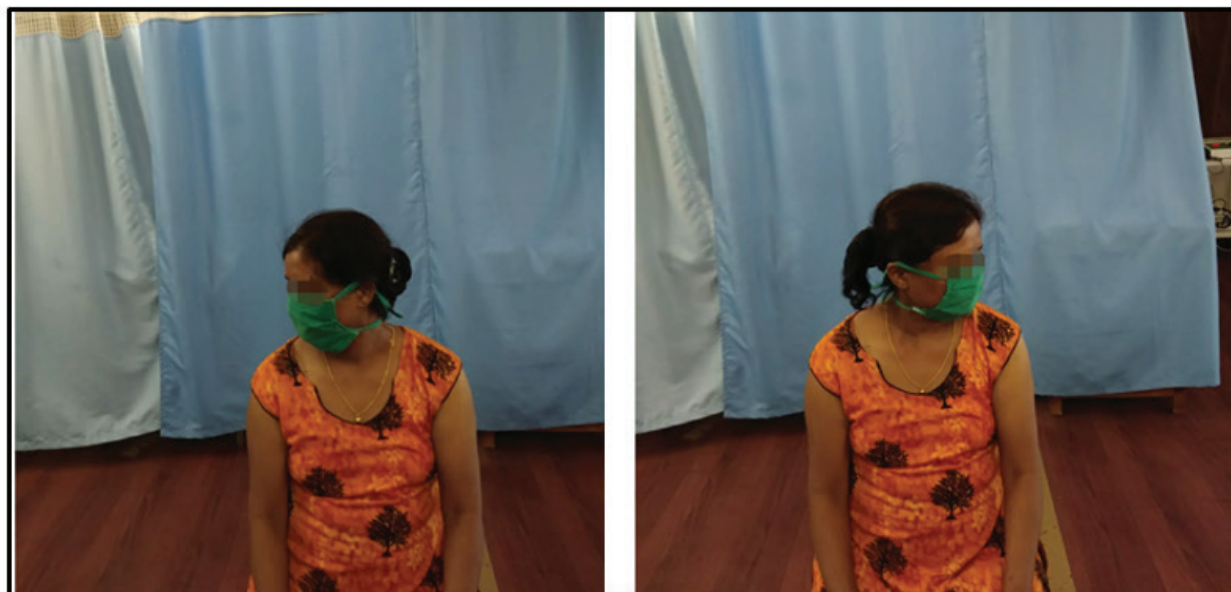


IMAGE 4 – Cervical Ranges after Undergoing Treatment for 2 Weeks

Results

After two weeks of regular treatment patient had significant improvement in her symptoms. There was improvement in patients neck ranges and muscle strength which have been mentioned in table 1 and 2. Also pain had subsided so the VAS rating which was 9 pre treatment reduced to 3 after regular treatment of two weeks. Improvement was also seen in neck disability index which have been shown in table 3 and Image 4.

Discussion

This was one of the challenging cases which we handled successfully in our department. As physiotherapists are known for their healing hands this case can be a perfect example for that as patient was purely treated with manipulations without application of any electrical modality. Hence, we concluded that manipulations can be successfully used to treat neck disorders. Laxmaiah Manchikanti et. al. conducted a study in 2004 in which she concluded that the prevalence of facet joint pain in patients with chronic cervical spine pain was 55%.⁷ Muhammad Osama in 2020 concluded in his study that MET in combination with conventional therapy improved spinal curvature, pain, disability, ROM and isometric muscle strength.⁸ Oznur Buyukturan, in 2018 concluded in his study that mulligan mobilization technique had significant effects on pain, ROM, functional level, kinesiophobia, depression, and QoL as long as it is performed by a specialist in patients of neck pain⁹. S J Horton in a case report in the year 2002 concluded that it may well be that the thoracic spine is ideally suited to SNAGs, and therefore may be the treatment of choice in acute presentations of thoracic pain when the zygapophyseal joints are implicated. Rather than just using SNAGs to improve end range of motion, they may also have a role in correcting acute postural deformity¹⁰. L Exelby in 2001 in a case report demonstrated an intervention to restore normal inter-segmental gliding using a mobilization with movement (MWM) in the 4-point rock back position which is followed by extension MWM of the lower lumbar spine. The treatment satisfied the theories proposed for the reduction of a facet joint lock.¹¹ YU Ze-sheng in 2007 concluded that for patients with cervical dislocation with locked facet, rapid skull traction-reduction should be performed for bilateral

cervical locked facet dislocation.¹² Xinjia wang in 2018 concluded that closed reduction of bilateral locked facet joints of the lower cervical spine is possible, but reduction of unilateral locked facet joints of the lower cervical spine (ULFJLCS) is challenging.¹³ In 2016 Soumyajit Basu in his study concluded that preoperative traction is a safe and effective initial treatment for neglected cervical facet dislocation, as it reduces the need for extensive (anterior and posterior) surgery.¹⁴

As per the above studies, simple conclusion can be derived that manipulations are very effective in treating locked facet joint. In this case patient was treated with combination of manipulations without applying any of the electrical modalities. Combination of mulligan and MET technique provided an excellent effect and patient had significant relief of the symptoms within a short span of 14 days.

Strength in this case was patient was very motivated and regular towards the treatment sessions. Limitations were that patient was advised to take rest but she could not do so as she was a working and could not discontinue her job.

Conclusion

Neck pain and stiffness may hamper day to day activities of oneself. Present report is a example which proves as to why a therapist is addressed for his healing hands as in this case no modality was used. Here after regular 2 weeks of treatment significant improvement was seen in cervical rangers and muscle strength. Even the pain had subsided drastically with improvement in NDI. Hence case signifies the importance of manual manipulations and glorifies its benefits.

Patient Informed Consent:

Proper patient consent was taken from patient for writing this case report.

Author's Contribution:

All author made best contribution for the concept, assessment and evaluation, data acquisition and analysis and interpretation of the data.

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Abbreviations:

VAS – Visual Analogue Scale

NDI – Neck Disability Index

ADL – Activities of Daily living

MMT – Manual muscle Testing

MET – Muscle Energy Technique

SNAGS – Sustained Natural Apophyseal Glide

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